



$$\langle J | = |J \rangle^\dagger = \begin{pmatrix} J_x^* & J_y^* \end{pmatrix} \quad |J \rangle = \begin{pmatrix} J_x \\ J_y \end{pmatrix}$$

$$\begin{aligned} I &= | \langle J | \mathbf{SLM} | J \rangle |^2 \\ &= \begin{pmatrix} J_x & J_y \end{pmatrix} \begin{pmatrix} X + iY & Z + iW \\ -Z + iW & X - iY \end{pmatrix} \begin{pmatrix} J_x \\ J_y \end{pmatrix} \end{aligned}$$